ENGINEERING FUNDAMENTALS ASSOCIATE IN APPLIED SCIENCE

Anticipated 2025FA start – Pending State Tech System and DOE approvals.

Program Description

The Engineering Fundamentals degree program at Greenville Tech allows students to complete the first two years of their education before transferring to a four-year institution to pursue a Bachelor of Science in an engineering discipline.

The Engineering Fundamentals Associate in Applied Science degree allows students to select a concentration from the following list.

- The **Automotive/Mechanical Engineering Concentrations** offers students an introduction to engineering principles, design methodologies, and analytical techniques essential for the development and improvement of mechanical systems and products. Through a combination of theoretical coursework and hands-on projects, students learn to apply their knowledge to real-world challenges in areas such as thermodynamics, fluid dynamics, materials science, and mechanics. This program prepares graduates for further study in mechanical engineering at a four-year institution, equipping them to develop and improve mechanical systems across diverse industries, including automotive, aerospace, and manufacturing.
- The **Civil Engineering Concentration** provides students with a solid foundation in the principles of engineering, design, and project management necessary for the planning, construction, and maintenance of infrastructure and environmental systems. Through a blend of theoretical coursework and practical experience, students explore key areas such as structural analysis and geotechnical engineering. This program prepares graduates for further study in civil engineering at a four-year institution, equipping them to tackle real-world challenges in urban development, infrastructure, and environmental sustainability.
- The **Chemical Engineering Concentration** offers students an essential understanding of chemistry fundamentals during the first two years of study. Through a mix of chemistry coursework and introductory engineering classes, students explore key areas such as organic chemistry, physical chemistry, and chemical processes. This program prepares graduates for further study in chemical engineering at a four-year institution, equipping them to pursue careers in fields such as pharmaceuticals, environmental science, and materials development.
- The **Computer Engineering Concentration** equips students with a foundational understanding of computer systems, hardware, and software design, preparing them for careers in a rapidly evolving technology landscape. Through a combination of theoretical coursework and hands-on projects, students delve into key areas such as digital logic design, microprocessors, embedded systems, and software engineering. This program prepares graduates for further study in computer engineering at a four-year institution, equipping them to innovate and develop solutions in various industries, including telecommunications, robotics, and cybersecurity.
- The **Electrical Engineering Concentration** offers students an essential understanding of electrical systems, circuits, and technology. Through a blend of theoretical coursework and practical experience, students explore key areas such as circuit analysis, signal processing, electronics. This program prepares graduates for further study in electrical engineering at a four-year institution, equipping them to contribute to advancements in various fields, including power systems, communications, and automation.

While the program was designed for transfer to Clemson University, the courses are also accepted at many major universities in South Carolina, including The Citadel and USC. Students should consult an advisor at their intended transfer institution to confirm course eligibility. Those wishing to transfer into one of Clemson's 11 engineering majors must complete a minimum of 30 transferable credit hours with a GPA of at least 2.7; meeting these requirements does not guarantee acceptance.

Mission Statement

The Engineering Fundamentals program is dedicated to facilitating the successful transfer of students to four-year institutions by offering high-quality, affordable engineering education directly in the Greenville area. Tailored for high school graduates who may not have been accepted directly into a four-year engineering program, as well as those facing financial constraints or individuals returning to academics, the program provides a supportive pathway to academic and professional success. Through personalized guidance and a robust curriculum, we empower students to achieve their educational goals and pursue their passion for engineering.

Entrance Requirements

High school diploma or equivalent and meet the eligibility requirements for MAT-140 Analytical Geometry and Calculus I, which includes completing MAT-111 College Trigonometry or achieving a satisfactory placement score. Students who do not meet the math requirements are encouraged to register for an appropriate Engineering Technology associate degree program prior to transferring to the Engineering Fundamentals program.

Type of Program

Associate degree (day, evening, online)

Requirements for Completion

Students must complete course requirements with a minimum of 2.7 GPA.

Transfer Requirements

Students planning to transfer and pursue a bachelor's degree are strongly urged to utilize Greenville Technical College's academic advising services. The transfer process for transfer tracks is very specific and leaves little opportunity for error in choosing classes. It is very important that students discuss curriculum and transfer requirements with their assigned academic advisor and with a transfer advisor at the four-year institution of their choice. It is most beneficial to the student if these discussions begin as soon as the choice to transfer to a four-year institution has been made.

Greenville Technical College has an Engineering Transfer Articulation Agreement with Clemson University. Students planning to pursue a bachelor's degree in engineering must complete an "Intent to Participate"

form before completing thirty (30) credit hours. Students must contact their academic advisor to complete the form.

Visit our web page at https://www.gvltec.edu/academics_learning/engineering-professional-studies/engineering_transfer/index.html (https://www.gvltec.edu/academics_learning/engineering-professional-studies/engineering_transfer/)

Recommended Program Schedule

Listed below is the ideal grouping of courses in order by semester. This plan assumes a full-time schedule. Note, however, that many variables can affect this plan, and not every course is offered every semester. Please see your advisor to map out your own personalized progression toward graduation.

Note: Please contact your advisor for recommended evening schedules.

The Automotive/Mechanical Engineering Concentration

Preferred Sequence

First Semester		**Hours**
CHM 110	College Chemistry I	4
ENG 101	English Composition I	3
MAT 140	Analytical Geometry and Calculus I	4
EGR 269	Engineering Disciplines and Skills	3
Social Science Elective (transferable) [1,2]		3-4
	Total Semester Hours	**17-18**
Second Semester		
ENG 102	English Composition II	3
MAT 141	Analytical Geometry & Calculus II	4
PHY 221	University Physics I	4
EGR 270	Introduction to Engineering	3
Humanities Elective (transferable) [1.2]		3-4
	Total Semester Hours	**17-18**
Third Semester		
PHY 222	University Physics II	4
EGR 209	Statistics for Engineers	3
EGR 275	Introduction to Engineering/Computer Graphics	3
	Total Semester Hours	**10**
Fourth Semester		
MAT 240	Analytical Geometry and Calculus III	4
ECE 221	Introduction to Electrical Engineering I	3
ECE 220	Electrical Engineering Lab I	1
EGR 260	Engineering Statics	3
EGR 206	Introduction to Materials Science	3
	Total Semester Hours	**14**
Fifth Semester		
MAT 242	Differential Equations	4
EGR 262	Engineering Dynamics	3
EGR 203	Foundations of Fluid and Thermal Systems	3
EGR 204	Mechanics of Materials	3
Literature Elective (200 Level transferable)		3
	Total Semester Hours	**16**
	Total Required Credit Hours	**74-76**

[1] South Carolina Act 26 of 2021, the "REACH Act", requires undergraduate students completing a baccalaureate degree to complete a three-credit course that requires, at a minimum, the reading of the U.S. Constitution, the Declaration of Independence, the Emancipation Proclamation, five Federalist Papers, and one document foundational to the African American Struggle; collectively known as the "Founding Documents." Therefore, students planning to transfer to a BS degree should consider PSC 201 American Government as the social science requirement OR HIS 201 American History: Discovery to 1877 as the humanities requirement.

[2] It is recommended that you check with an advisor at the school you are interested in transferring to about specifics regarding requirements, electives, and those courses that they accept in transfer.

Civil Engineering Concentration

Preferred Sequence

First Semester		**Hours**
CHM 110	College Chemistry I	4
ENG 101	English Composition I	3
MAT 140	Analytical Geometry and Calculus I	4
EGR 269	Engineering Disciplines and Skills	3
Humanities Elective (transferable) [1,2]		3-4
	Total Semester Hours	**17-18**
Second Semester		
ENG 102	English Composition II	3
MAT 141	Analytical Geometry & Calculus II	4
PHY 221	University Physics I	4
EGR 270	Introduction to Engineering	3
GLY 101	Physical Geology	4
	Total Semester Hours	**18**
Third Semester		
PHY 222	University Physics II	4
EGR 209	Statistics for Engineers	3
EGR 210	Introduction to Engineering CAD	3
	Total Semester Hours	**10**
Fourth Semester		
MAT 240	Analytical Geometry and Calculus III	4
EGR 260	Engineering Statics	3
EGR 206	Introduction to Materials Science	3
EGR 285	Engineering Surveying I	3
EGR 295	Engineering Surveying Lab I	1
	Total Semester Hours	**14**
Fifth Semester		
MAT 242	Differential Equations	4
EGR 262	Engineering Dynamics	3
EGR 204	Mechanics of Materials	3
Social Science Elective (transferable) [1,2]		3-4

Literature Elective (200 Level transferable)		3
	Total Semester Hours	**16-17**
	Total Required Credit Hours	**75-77**

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Chemical Engineering Concentration

Preferred Sequence

First Semester		**Hours**
CHM 110	College Chemistry I	4
ENG 101	English Composition I	3
MAT 140	Analytical Geometry and Calculus I	4
EGR 269	Engineering Disciplines and Skills	3
Humanities Elective (transferable) [1,2]		3-4
	Total Semester Hours	**17-18**
Second Semester		
ENG 102	English Composition II	3
MAT 141	Analytical Geometry & Calculus II	4
PHY 221	University Physics I	4
CHM 111	College Chemistry II	4
	Total Semester Hours	**15**
Third Semester		
PHY 222	University Physics II	4
EGR 209	Statistics for Engineers	3
Social Science Elective (transferabe) [1,2]		3-4
	Total Semester Hours	**10-11**
Fourth Semester		
MAT 240	Analytical Geometry and Calculus III	4
ECE 221	Introduction to Electrical Engineering I	3
ECE 220	Electrical Engineering Lab I	1
CHM 211	Organic Chemistry I	4
EGR 270	Introduction to Engineering	3
	Total Semester Hours	**15**
Fifth Semester		
MAT 242	Differential Equations	4
CHM 212	Organic Chemistry II	4
Literature Elective (200 Level transferable)		3
SPC 205	Public Speaking	3
EGR 275	Introduction to Engineering/Computer Graphics	3
	Total Semester Hours	**17**
	Total Required Credit Hours	**74-76**

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Computer Engineering Concentration

Preferred Sequence

First Semester		**Hours**
CHM 110	College Chemistry I	4
ENG 101	English Composition I	3
MAT 140	Analytical Geometry and Calculus I	4
EGR 269	Engineering Disciplines and Skills	3
Humanities Elective (transferable) [1,2]		3-4
	Total Semester Hours	**17-18**
Second Semester		
ENG 102	English Composition II	3
MAT 141	Analytical Geometry & Calculus II	4
PHY 221	University Physics I	4
EGR 202	Introduction to Engineering Programming	3
ECE 211	Introduction to Computer Engineering I	3
ECE 210	Computer Engineering Lab I	1
	Total Semester Hours	**18**
Third Semester		
PHY 222	University Physics II	4
ECE 212	Introduction to Computer Engineering II	3
ECE 215	Computer Engineering Lab II	1
	Total Semester Hours	**8**
Fourth Semester		
MAT 240	Analytical Geometry and Calculus III	4
SPC 205	Public Speaking	3
EGR 270	Introduction to Engineering	3
ECE 221	Introduction to Electrical Engineering I	3
ECE 220	Electrical Engineering Lab I	1
Social Science Elective (transferable) [1,2]		3-4
	Total Semester Hours	**17-18**
Fifth Semester		
MAT 242	Differential Equations	4
EGR 209	Statistics for Engineers	3

ECE 222	Intro to Electrical Engineering II	3
ECE 225	Electrical Engineering Lab II	1
Literature Elective (200 Level transferable)		3
	Total Semester Hours	**14**
	Total Required Credit Hours	**74-76**

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Electrical Engineering Concentration

Preferred Sequence

First Semester		**Hours**
CHM 110	College Chemistry I	4
ENG 101	English Composition I	3
MAT 140	Analytical Geometry and Calculus I	4
EGR 269	Engineering Disciplines and Skills	3
Humanities Elective (transferable) [1,2]		3-4
	Total Semester Hours	**17-18**
Second Semester		
ENG 102	English Composition II	3
MAT 141	Analytical Geometry & Calculus II	4
PHY 221	University Physics I	4
EGR 202	Introduction to Engineering Programming	3
ECE 211	Introduction to Computer Engineering I	3
ECE 210	Computer Engineering Lab I	1
	Total Semester Hours	**18**
Third Semester		
PHY 222	University Physics II	4
ECE 212	Introduction to Computer Engineering II	3
ECE 215	Computer Engineering Lab II	1
CHM 111	College Chemistry II	4
	Total Semester Hours	**12**
Fourth Semester		
MAT 240	Analytical Geometry and Calculus III	4
SPC 205	Public Speaking	3
EGR 270	Introduction to Engineering	3
ECE 221	Introduction to Electrical Engineering I	3
ECE 220	Electrical Engineering Lab I	1
	Total Semester Hours	**14**
Fifth Semester		
MAT 242	Differential Equations	4
EGR 209	Statistics for Engineers	3
ECE 222	Intro to Electrical Engineering II	3
ECE 225	Electrical Engineering Lab II	1
Social Science Elective (200 transferable) [1,2]		3-4
	Total Semester Hours	**14-15**
	Total Required Credit Hours	**75-77**

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